Short Communications

Wilson Bulletin 117(3):313–315, 2005

Rolling Prey and the Acquisition of Aerial Foraging Skills in Northern Mockingbirds

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ABSTRACT.—I describe an unusual food-handling behavior performed by juvenile Northern Mockingbirds (*Mimus polyglottos*). In the course of one morning, I observed juvenile Northern Mockingbirds repeatedly roll several prey items down the incline of a roof in Charlottesville, Virginia. I discuss this behavior in the context of the development of aerial foraging skills. *Received 20 September 2004, accepted 26 April 2005.*

Newly independent passerines are often inefficient foragers and are under selective pressure to acquire foraging skills quickly once parental care has ended (Weathers and Sullivan 1991). Foraging skills take time to master, and some types of foraging, such as aerial hawking, take longer to master than others (Moreno 1984, Marchetti and Price 1989). Object play, which often involves the dropping and catching of both food and non-food items, might be an important adaptive behavior that helps newly independent birds develop such foraging skills (Gamble and Cristol 2002). Instances of apparent solitary object play are occasionally reported in birds, but few such instances have been reported in non-corvid passerines (Ficken 1977, Diamond and Bond 2003). Here, I report an observation of unusual prey manipulation and possible object play in a non-corvid passerine, the Northern Mockingbird (*Mimus polyglottos*).

OBSERVATION

On 27 July 2004, in suburban Charlottesville, Virginia, from 08:46 to 09:28 EDT (25° C, light rain), I observed a trio of juvenile Northern Mockingbirds on my neighbor's rooftop (~35° incline). I observed without binoculars for the first 10 min and with binoculars for the remaining time.

At 08:46, I saw three juvenile Northern Mockingbirds perched on the peak of the roof. One of the juveniles (bird A) had an earthworm (4–5 cm in length, clitellum visible) in its beak. It dropped the worm, which formed into a ball and rolled down the roof about 1 m. Bird A ran after and grabbed the worm in its beak. The other two juveniles (B and C) pursued A. When B and C came within 0.5 m of A, A jumped up, flashed its white wing patches, and lifted its feet into the air (see Hayslette 2003 for more on wing-flashing). Birds B and C ran back up to the rooftop. Bird A then flew back to the rooftop, dropped the worm, let it roll 1 m down the incline, ran after it, grabbed the worm in its beak, thrashed the worm against the roof, dropped the worm, let it roll another 1 m down the incline, retrieved it and returned to the rooftop. Birds B and C ran toward A at the top of the roof, at which point bird A flew up about 1.5 m above the roof line, with the worm in its beak.

Two adult-plumaged Northern Mockingbirds flew onto the roof. One adult bird flew toward birds B and C, both of which flew off out of sight. Bird A jumped up and wing-flashed about 1 m from one of the adult Northern Mockingbirds. After a few minutes, the adult Northern Mockingbirds left. Bird A, now alone on the roof, spent the next 4 to 5 min rolling the worm down the roof, usually 1 m at a time, retrieving it, thrashing it on the surface of the roof, flying or walking back to the roof line, and rolling the worm down again. This behavior was repeated a total of seven times. Finally, bird A consumed the worm and flew out of sight at 08:56.

At 09:20, one juvenile Northern Mockingbird returned to the roof carrying a small winged insect (<2 cm in length) in its beak. It dropped the insect on the roof ridge, picked it up, and dropped it again, at which point the insect rolled about 0.3 m down the roof. The bird picked up the insect, ate it, and flew off.

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Five min later, one juvenile Northern Mockingbird returned with a large larva, 4–5 cm long, possibly *Ceratomia catalpae* (Wagner et al. 1997). The larva had roughly 10 parasitoid wasp pupae attached to its thorax. Two other juvenile Northern Mockingbirds arrived and harassed the owner of the larva. The owner dropped the larva, which rolled down the roof about 1 m. The owner retrieved the larva, brought it to the top of the roof, and thrashed the larva on the edge of the roof. This rolling, thrashing, and retrieving behavior was repeated three additional times. Some of the wasp pupae attached to the larva fell off during the thrashing. The owner then flew away with the intact larva in its beak. The two remaining juveniles alternately displaced each other and then flew off together. The birds did not reappear on the roof in the next 2 hr.

DISCUSSION

Newly independent Northern Mockingbirds in south Florida are less proficient at prey capture than adults (Breitwisch et al. 1987), and studies of Northern Mockingbirds and other passerines have revealed that proficient aerial foraging takes longer to achieve than proficient ground foraging (Moreno 1984, Breitwisch et al. 1987). The rolling of invertebrate prey, as reported here, is possibly a method that Northern Mockingbirds use to develop aerial foraging skills. Juvenile Northern Mockingbirds also have been observed picking up gravel and other inedible objects from the ground and then dropping them, possibly a result of inexperience with prey, but possibly an adaptive behavior involved in the acquisition of ground foraging skills (Breitwisch et al. 1987). In the present observation, the roof allowed the prey to roll away from the Northern Mockingbirds, but not as quickly as if dropped in mid-air. Therefore, the roof might provide a "safe" place for young birds to practice catching air-borne prey or retrieving prey dropped in mid-air (Gamble and Cristol 2002).

An alternate explanation is that the juvenile Northern Mockingbirds chose an inappropriate location to process prey items and the rolling was incidental. Many passerines, such as Spotted Antbirds (*Hylophylax naevioides*), thrash prey against hard surfaces prior to consumption (Willis 1972), and adult Northern Mockingbirds in North Carolina have been observed to do the same (A. Skypala pers. comm.). The juveniles I observed simply could have chosen a poor place to thrash prey items.

This observation highlights the difficulty of determining whether instances of apparent play are an adaptive part of an animal's behavioral repertoire or whether they are incidental outcomes resulting from a lack of experience. Play is notoriously difficult to define and is frequently a catch-all term for any seemingly purposeless behavior, especially if it is observed in young animals (Martin and Caro 1985, Bekoff and Byers 1998, Diamond and Bond 2003). Distinguishing between adaptive play behavior and inexperience is challenging, but such distinctions can lead to insights about the selective pressures that shape learning (Martin and Caro 1985). Longitudinal studies following individuals would be required to determine whether Northern Mockingbirds that engage in prey rolling as juveniles are more efficient at aerial prey capture as adults or achieve aerial proficiency more quickly than birds that do not roll prey down inclines (Gamble and Cristol 2002).

ACKNOWLEDGMENTS

I would like to thank A. Skypala, R. H. Wiley, A. B. Bond, and two anonymous referees for suggestions on an earlier version of this manuscript. I also thank R. Fox for information on parasitoid wasp life cycles.

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Wilson Bulletin 117(3):315–316, 2005

Above-ground Nesting by Northern Bobwhite

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ABSTRACT.—The Northern Bobwhite (*Colinus virginianus*) is one of the most studied game birds in North America. It is a ground-nesting galliform capable of producing multiple nests during a single season. Since 1993, personnel of the Albany Quail Project have radio-tagged >6,000 bobwhites and monitored >2,000 nests via radio telemetry on private lands in southwestern Georgia. We have observed nests in some peculiar places; however, every nest that we have monitored has been on the ground. Previously, no case of above-ground nesting has been documented for this species. Here, we report an above-ground nest, found in June 2001. *Received 27 September 2004, accepted 21 May 2005.*

Gallinaceous birds typically nest on the ground, and the Northern Bobwhite (*Colinus virginianus*) is no exception. Bobwhites usually nest in herbaceous vegetation consisting of mixed grasses and forbs, such as that found along fencerows and roadsides or in idle/fallow areas and other early successional habitats. The bobwhite has a propensity to nest near edges (usually within 15.5 m) of roads, fields, disked strips, or pathways (Stoddard 1931, Rosene 1969, Simpson 1972). Typical nests are constructed primarily of grasses (e.g., *Andropogon* spp.) and pine (*Pinus* spp.) needles, although other materials may include mosses, leaf litter, and tree-limb debris. It is well documented that bobwhites use a wide variety of nesting sites (Stoddard 1931, Rosene 1969, Simpson 1972, Klimstra and Roseberry 1975) and some are located in peculiar places (e.g., ditch banks, dense stands of hardwoods, and flowerbeds). Carter et al. (2002) reported the importance of prickly pear (*Opuntia* spp.) as nesting cover following a prescribed burn in Texas. Whereas bobwhite nesting ecology has been thoroughly studied throughout its range, above-ground nesting has not been reported in the peer-reviewed literature.

During the course of our ongoing studies for the Albany Quail Project, we have radio-tagged >6,000 bobwhites and found >2,000 nests. The study area is located on private lands in Baker County, southwestern Georgia (31° 21′ 35″ N, 84° 16′ 18″ W) in the Upper Coastal Plain physiographic region. Study sites are characterized by old-field pine forests with relatively low basal area that are intensively managed for bobwhite. Habitat management regimes typically include annual burning, seasonal disking, drum-chopping and mowing, supplemental feeding, and mammalian nest-predator control. As a result of these

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